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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/204,364	12/04/1998	YONG-WOO HUR	SEC.492	5433

7590 06/24/2005
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EXAMINER

SNAY, JEFFREY R

ART UNIT PAPER NUMBER

1743

DATE MAILED: 06/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/204,364

Applicant(s)

HUR, YONG-WOO

Examiner

Jeffrey R. Snay

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 11-20 is/are rejected.
- 7) ☒ Claim(s) 7-10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 1998 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 2-20 in the reply filed on 06-13-2005 is acknowledged.
2. Claim 1 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 06-13-2005.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1-5 and 11-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite in that it recites a step of cooling, whereas no prior step of heating is recited. It is unclear what is intended as being cooled to room temperature where the method fails to require anything to be heated above room temperature.

In claim 12, "the second higher inner temperature" lacks antecedent basis in the claims.

In claim 13, "the inner temperature," "the dry oven," and "the pressure container" each lack antecedent basis in the claims.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 2, 3, 6, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kemmochi et al, alone or in view of Maxfield et al.

Kemmochi et al disclose a method for detecting impurities in silicon dioxide which comprises acid digestion of a sample followed by either atomic absorption (col. 2, lines 49-50) or emission (col. 4, line 29) spectroscopy. The digestion step comprises immersion of the sample in a three part acid mixture comprising hydrofluoric, nitric and sulfuric acids (Example 1). The sample is immersed in the acid solution in a platinum crucible inner vessel, placed in a pressurizable decomposition outer vessel (col. 3, lines 1-4) and heated to a temperature of at least 100 degrees C (col. 2, lines 40-41).

Subsequent to the high temperature digestion, the sample is cooled to room temperature and diluted with pure water (col. 4, lines 15-17). The so-dissolved sample is then analyzed.

The method of Kemmochi et al differs from instant claim 2 in that it fails to disclose the acid solution being provided in equal parts. However, the relative concentration of each of the three acids would have constituted known result effective variables, and their optimization for the purpose of facilitating the desired digestion process would have been obvious to one of ordinary skill in the art. Alternatively, Maxfield et al teach that an equal part solution of the same three acids was known for the purpose of dissolving metals from a surface (see page A 1518).

Regarding the presently recited step of removing fumes from the dissolved sample, it is noted that the step taught by Kemmochi et al of further heating to 800 degrees C (Example 1) would inherently have removed any such fumes by evaporation..

Regarding the presently recited limitation that the sample contains zirconium, see Kemmochi et al at column 1 first paragraph. Regarding the presently recited limitation that the sample contains aluminum oxide, it is noted that Kemmochi et al teach the processing of natural quartz, which inherently would have contained aluminum oxide.

Regarding the presently recited limitation that the temperature is maintained for 22 to 26 hours, or 45 to 55 hours, it would have been obvious to one of ordinary skill in the art to maintain the temperature for as long as necessary to accomplish the desired dissolution of impurities, dependent upon the particular sample and level of impurities

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under study. Similarly, regarding the presently recited limitation of then cooling the sample for 20-40 minutes, it would have been obvious for one of ordinary skill in the art to conduct such cooling for as long as necessary to achieve the desired cooling to room temperature.

Regarding the presently recited concentration achieved upon dilution with water, such concentration appears to be present in the disclosure of Kemmochi et al (see Example 1 and col. 4, lines 15-17). In any event, the final dilution concentration would have constituted an known result effective variable. It would have been obvious for one of ordinary skill to optimize such dilution concentration in order to facilitate the desired subsequent analysis by atomic absorption or emission spectroscopy.

Regarding the presently recited concentration of sample immersed in acid solution, it is noted that the concentrations in Example 1 of Kemmochi et al are very close. Further optimization of the amount of sample and acid solution would have been obvious to one of ordinary skill in the art in order to enable the desired acid digestion dependent upon a given sample and level of impurities therein.

Allowable Subject Matter

8. Claims 4 and 5 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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9. Claims 7-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Booth teaches sample analysis by dissolution in a composition of hydrofluoric, sulfuric and nitric acids, followed by inductively coupled plasma analysis (col. 19). Chamberlain et al disclose sample analysis by dissolution in hydrofluoric acid, in combination with sulfuric and/or nitric acid, followed by atomic emission spectroscopy (col. 8, lines 56-64). Sakon et al disclose a semiconductor cleaning solution comprising hydrofluoric, nitric and sulfuric acids (col. 5, lines 49-59). The remaining prior art is pertinent as background information related to applicant's field of endeavor.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. Snay whose telephone number is (571) 272-1264. The examiner can normally be reached on Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jeffrey R. Snay
Primary Examiner
Art Unit 1743

jrs